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- (71) Applicant (for all designated States except US): **RI-BOMED BIOTECHNOLOGIES, INC.** [US/US]; 4829 South 38th Street, 1st Floor, Phoenix, Arizona 85040 (US).
- (71) Applicant and
- (72) Inventor: **HANNA, Michelle, M.** [US/US]; 3725 East Atlanta Avenue, Phoenix, Arizona 85040 (US).
- (74) Agents: **BUGAISKY, Lawrence, B.** et al.; Sterne, Kessler, Goldstein & Fox P.L.L.C., 1100 New York Avenue, N.W., Washington, District of Columbia 20005 (US).

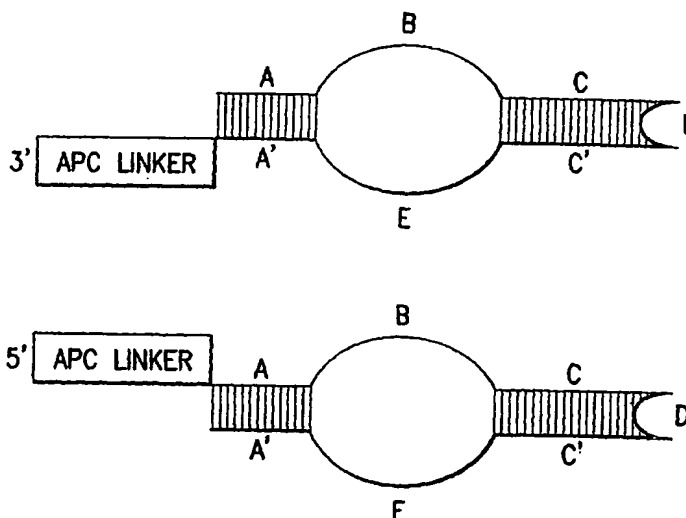
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[Continued on next page]

(54) Title: MOLECULAR DETECTION SYSTEMS UTILIZING REITERATIVE OLIGONUCLEOTIDE SYNTHESIS



(57) Abstract: The present invention provides methods for detecting the presence of a target molecule by the use of nucleotide analogs containing moieties that enable detection. Such analogs may be incorporated into nucleic acids. In one embodiment, nucleotide analogs are used in a process generating multiple detectable oligonucleotides through reiterative enzymatic oligonucleotide synthesis events on a defined polynucleotide sequence. The methods generally comprise using a nucleoside, a mononucleotide, an oligonucleotide, or a polynucleotide, or analog thereof, to initiate synthesis of an oligonucleotide product that is substantially complementary to a target site on the defined polynucleotide sequence; optionally using nucleotides or nucleotide analogs as oligonucleotide chain elongators or chain terminators to terminate the polymerization reaction; and detecting multiple oligonucleotide products that have been synthesized by the polymerase.



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